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Position Paper ■

Toward Standard Classification Schemes for Nursing Language: Recommendations of the American Nurses Association Steering Committee on Databases to Support Clinical Nursing Practice

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Abstract The American Nurses Association (ANA) Cabinet on Nursing Practice mandated the formation of the Steering Committee on Databases to Support Clinical Nursing Practice. The Committee has established the process and the criteria by which to review and recommend nursing classification schemes based on the ANA Nursing Process Standards and elements contained in the Nursing Minimum Data Set (NMDS) for inclusion of nursing data elements in national databases. Four classification schemes have been recognized by the Committee for use in national databases. These classification schemes have been forwarded to the National Library of Medicine (NLM) for inclusion in the Unified Medical Language System (UMLS) and to the International Council of Nurses for the development of a proposed International Classification of Nursing Practice.

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As we move toward national health care reform, one of the essential elements is to facilitate the collection and analysis of massive amounts of data via large computer networks. One impediment to exchanging

information over large national networks of health care information is the lack of agreement on criteria for inclusion of terms in a national language. In an effort to move the nursing profession toward a

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unified nursing language with terms that are well defined, the American Nurses Association (ANA) has taken the lead through the Steering Committee on Databases to Support Clinical Nursing Practice.¹ The Committee is charged with proposing professional policy and program initiatives for nursing classification schemes, uniform nursing data sets, and the inclusion of nursing data elements in national databases; building national data sets for clinical nursing practice based on elements contained in professional standards; and coordinating nursing initiatives related to public and private efforts regarding development of databases. The efforts of this committee and its current recommendations are described for the informatics community so that they may begin to utilize these nursing classification schemes as standards, test their usefulness in practice, and provide feedback to the Committee on their utility in documenting nursing practice.

ANA Practice Standards

In 1980 the ANA defined nursing: "Nursing is the diagnosis and treatment of human responses to actual or potential health problems."² In 1991 the ANA expanded the definition of the nursing process: "The nursing process encompasses all significant actions taken by nurses in providing care to all clients, and forms the foundation of clinical decision making. Additionally, nursing responsibilities for all clients (such as providing culturally and ethnically relevant care, maintaining a safe environment, educating clients about their illness, treatment, health promotion or self-care activities, and planning for continuity of care) are subsumed within these standards. Therefore

Table 1 ■

Criteria Used by the American Nurses Association Steering Committee on Databases to Support Clinical Nursing Practice to Recognize a Nursing Classification Scheme

1. Be clinically useful for making diagnostic, intervention, and outcome decisions.
2. Be stated in clear and unambiguous terms, with terms defined precisely.
3. Demonstrate evidence of testing for reliability.
4. Have been validated as useful for clinical purposes.
5. Be accompanied by documentation of a systematic methodology for development.
6. Be accompanied by evidence of process for periodic review and provision for adding, revising, or deleting terms.
7. Provide a unique identifier or code for each term.

'standards of care' delineate care that is provided to all clients of nursing services."³ These two ANA definitions of nursing practice were the overriding concepts that the Committee first endorsed. The current standards of practice that were principles in designing the new databases for nursing practice include the six components of the nursing process³:

1. Assessment: collects client health data
2. Diagnosis: analyzes assessment data to determine diagnosis
3. Outcome identification: identifies expected outcomes individualized to the client
4. Planning: develops plans of care and prescribes interventions to attain expected outcomes
5. Implementation: implements the interventions for plans of care
6. Evaluation: evaluates client's progress toward the attainment of outcomes.

Nursing Minimum Data Set

The next concept that the Committee endorsed was the Nursing Minimum Data Set (NMDS). The NMDS is an abstraction system for collecting uniform minimum nursing data. The 16-item NMDS is designed to guide the collection of nursing data in any health care delivery system. The NMDS can be used by health care professionals, researchers, administrators, and policy makers. It includes the conceptual variables needed in computer systems to describe, measure, and determine the quality of nursing care and to begin to establish the cost of that care.⁴ It includes four nursing care elements, five patient or client demographics elements, and seven service elements. These 16 items were recently reported by Ozbolt et al.⁵ The four nursing care elements are nursing diagnosis, nursing intervention, nursing outcome, and intensity of nursing care.

In 1990 the ANA House of Delegates passed a resolution that recommended that the NMDS be used as the essential data elements needed to define the costs and quality of nursing care. The Committee has been examining existing national health-related classification schemes with regard to the presence of data elements for nursing diagnoses, interventions, and outcomes of care.

Criteria for Recognizing Classification Schemes

The Committee developed criteria for recognizing what classification schemes should be included in nursing language and integrated into national databases.⁶ The criteria for recognizing a nursing classification scheme are listed in Table 1.

These criteria attempt to analyze the internal consistency of the classification scheme and to determine the scientific rigor of development, potential for use, validity and reliability of terms, and commitment toward updating the language in the classification scheme. It will remain a challenge for the nursing profession to refine and maintain criteria to select nursing vocabularies or classification schemes for use in national databases.

Nursing Classification Schemes That Meet the Criteria

Since the mid-1970s, four nursing nomenclatures, listed in Table 2, have been developed by nursing researchers supported by the Division of Nursing, the National Center for Nursing Research (now the National Institute for Nursing Research), the Health Care Financing Administration, and the National Library of Medicine (NLM). These nomenclatures provide the names and labels, taxonomies, relationships between different classes, and classification or hierarchy for coding structures needed to form nursing language. These four classifications were recommended by the Committee for inclusion in national and international databases.

The North American Nursing Diagnosis Association (NANDA)

During the 1970s NANDA was formed and began to introduce and label nursing diagnoses. The initial list of 34 nursing diagnoses increased to 72 by 1982.⁷ By 1992, NANDA had a list of 104 approved nursing diagnosis labels for assessing patient care.⁸ The Committee recognized this nursing vocabulary and taxonomy as a classification scheme for nursing practice.

Since 1991, NANDA has had the nursing diagnosis terms classified into nine patterns or Level I concepts, which provide an organizing framework.⁹ The taxonomy provides a beginning classification scheme that can be used to categorize and classify nursing diagnostic labels. The taxonomy is arranged alphabetically and coded using the International Classification of Disease (ICD) framework, which consists of a four-character structure.¹⁰ It consists of an alphabetical character in the first position followed by

Table 2 ■

Four Classification Systems That Have Been Recognized by the American Nurses Association Steering Committee on Databases to Support Clinical Nursing Practice as Usable for Documenting Nursing Practice

1. The North American Nursing Diagnosis Association
2. The Omaha System: Applications for Community Health Nursing
3. The Home Health Care Classification
4. The Nursing Interventions Classification

two numeric characters, a decimal point, and a third numeric character if needed.

The methodology for inclusion of terminology in NANDA has been described in many publications and was recently summarized.⁸ It includes nursing theory review and review of taxonomy and diagnosis using rules of classification and guidelines for taxonomy development. Through the research development and review process, the nursing diagnosis classification scheme continues to evolve.

The Omaha System: Applications for Community Health Nursing

The Omaha Community Health Problem and Intervention Classification System was started in 1976. It was supported by a Division of Nursing, PHS, US DHHS contract.¹¹ It consisted of a list of 49 client problems that was developed by the Visiting Nurses Association of Omaha, Nebraska. This classification scheme was designed for nurses in community and public health services. It was expanded recently to encompass interventions. The Omaha System now follows a theoretical framework that the patient has needs to assess, there are interventions to be delivered, and there are outcomes that measure the patient's progress for identified problems. The initial Omaha problem list has been researched, revised, and expanded. The current list consists of 44 patient problems categorized into four domains (environmental, psychosocial, physiological, and health-related behaviors), 63 interventions categorized into four categories (health teaching, guidance, and counseling; treatments and procedures; case management; and surveillance), and a problem-rating scale for outcomes in three domains (knowledge, behavior, and status, which has five degrees of intensity).¹²

The Home Health Care Classification

The Home Health Care Classification developed by Saba et al. includes diagnoses and interventions and

was generated to assist home health care nurses in predicting care needs and determining resource use, as well as documenting the nursing process.¹³ It was developed for coding and classifying data through a cooperative agreement awarded from the Health Care Financing Administration to Georgetown University School of Nursing. The classification is structured using 20 home health components, 145 home health diagnoses, three expected outcomes (improved, stabilized, and deteriorated), and 160 home health interventions classified into four actions (assess, direct care, teach, and manage).¹⁴ This classification is being implemented in several home health care agencies as an innovative method for predicting and documenting clinical nursing practice following the nursing process.

The Nursing Interventions Classification (NIC)

In 1992 the University of Iowa project that had been supported by the National Center for Nursing Research (now the National Institute of Nursing Research) disseminated a classification scheme for documenting nursing practice interventions.¹⁵ The Iowa Interventions Project: Nursing Interventions Classification (NIC) consists of a list of 336 nursing intervention labels¹⁶; 21 others have been developed since publication of the book about this classification.¹⁷ The interventions are alphabetized and grouped into six domains: 1) physiological, basic; 2) physiological, complex; 3) behavioral; 4) family; 5) health system; and 6) safety.¹⁷ The classification is currently being tested in many environments; a revision will be published.

Unified Nursing Language System

Another concept that the Committee endorsed was that of a Unified Nursing Language System (UNLS)^{6,18} in collaboration with the Unified Medical Language System (UMLS) being developed by the NLM. The lack of UNLS is an impediment to linking nursing language nationally and internationally. Uniform schemes to describe nursing practice are needed to permit identification and rigorous analyses of the content, processes, and outcomes of nursing care.

The concept of the UNLS is the same as that of the UMLS. The UMLS is a project of the NLM to develop a compendium of terms and concepts from a variety of biomedical vocabularies, a semantic network consisting of hierarchical relationships, and an information-source map to access vocabularies.¹⁹ It is an attempt to develop a method for integrating existing vocabularies to facilitate access to data elements and transfer between computer-based information sources.

The UNLS within the UMLS includes concepts, terms, and strings. It includes the semantic typing for the concepts and identification of semantic relations among semantic types. It also includes mappings of terms from different vocabularies by relating them to each other or by acknowledging them as synonyms of the same concepts. At this time, NANDA, NIC, and the Home Health Care Classification have been incorporated into the UMLS. They can be utilized by the nursing profession as a separate UNLS if pulled away from the UMLS. The advantage to integrating nursing terms into the UMLS is to represent the language system as multidisciplinary, which is similar to the environment in which we practice, document care, and communicate outcomes of care.

The NLM has agreed to add to the UMLS all nursing vocabularies recognized by the ANA through the Committee. This work will proceed gradually as resources permit, beginning with the 1992 edition of the Metathesaurus.

Activities Related to Outcomes Classification

The classification schemes recommended for inclusion in the nursing language and integration into a UNLS reflect assessment, diagnosis, and intervention components of the nursing process. Limited work has been done on the identification of patient outcomes that can be attributed to nursing. In the NMDS it was recommended that the diagnostic outcome status be identified as resolved, not resolved, or referred for continuing care.⁴ This concept was advanced by Marek in 1989 when she classified potential outcomes of care.²⁰ In 1990, Lang and Marek advanced the concepts from Marek's earlier work.²¹ In 1991, McCormick defined potential achievable outcomes and directions of change that outcomes could take: improvement, stabilization, deterioration, and death.²² None of these concepts meets the criteria for a classification scheme, and the Committee has not recognized any classification of nursing outcomes at this time.

A Proposed International Classification of Nursing Practice (ICNP)

In 1989, the ANA submitted the NANDA classification to the World Health Organization (WHO) North American Collaborating Center for use in the Classification of Diseases, which emanates from the National Center for Health Statistics, PHS, US DHHS. This office is also responsible for the adaptation and development of the International Classification of Disease in the United States (ICD-CM). The goal

Table 3 ■

The Proposed International Classification of Nursing Practice²⁴

System	Author(s)	Country	Language*	Type†
Ambulatory care	Verran ²⁵	US	E	I
Australian	Jones et al. ²⁶	Australia	E	P, I
Belgian	Sermeus and Delesie ²⁷	Belgium	F, FL, E	I
Danish	Danish Institute for Health and Nursing Research ²⁸	Denmark	D, E	
Henderson‡	Henderson ²⁹	US	E, F, S, G	P
Iowa	McCloskey and Bulechek ¹⁶	US	E	I
Lang and Marek	Lang and Marek ²¹	US	E	O
NANDA§	NANDA ⁸	US	E, F, P, S	P
Nursing lexicon	Grobe ³⁰	US	E	I
Nursing Minimum Data Set	Werley and Lang ⁴	US	E	I, O
OMAHA	Martin and Scheet ¹²	US	E	P, I, O
Répertoire Diagnostics Infirmiers	Riopelle et al. ³¹	Canada	F	P
Saba	Saba et al. ¹³	US	E	P, I
Swedish	Ehnfors et al. ³²	Sweden	Sw, E	I

*D = Danish; E = English; F = French; FL = Flemish; G = German; P = Portuguese; S = Spanish; SW = Swedish.

†P = problem/diagnosis; I = intervention/treatment; O = outcome.

‡Available in 26 different languages.

§NANDA = North American Nursing Diagnosis Association.

was to have this office forward to the WHO the classification of nursing diagnoses for inclusion in the ICD-10.

The nursing diagnoses were modified to conform with coding in ICD-10.¹⁰ The ICD-10 added a new version to the classification, a concept called The Family of Disease and Health-Related Classifications. This concept enables classifications such as nursing diagnoses, which are not disease conditions, to be eligible for inclusion in the ICD as family members. The classification was approved, endorsed, and forwarded to the WHO as eligible for inclusion within ICD-10. Further discussion of this work at the WHO led to deferment of action until the proposal had approval by the other member countries of the WHO. This action led to the recommendation that the WHO's nursing unit and the International Council of Nurses work jointly on developing a classification and getting endorsement from the nursing organizations around the world. The WHO considered international agreement on nursing diagnoses classification essential before submission of such a system for inclusion in the ICD framework.

Subsequently, in 1993 a draft classification scheme was introduced by the International Council of Nurses

(ICN).²³ This scheme is the proposed International Classification of Nursing Practice (ICNP)²⁴ (Table 3). The Professional Services Committee of the ICN has been working on this classification. The ICNP is divided into three elements of nursing practice: 1) nursing problems/diagnoses, 2) nursing interventions, and 3) outcomes. Each element is alphabetized and compared with a term used by another country. The goals of the project are to 1) develop a specified process and product, 2) achieve recognition by national and international nursing communities, 3) ensure compatibility with the WHO ICD and the WHO Family of Classifications, 4) achieve utilization for the development of national databases, and 5) establish an international minimum data set. Once the process is completed and the goals are achieved, the ICN will submit the final classifications to the WHO for approval and endorsement.

Discussion

Informatics researchers are now recognizing that uniform concepts are critical in decision support and that comparative data are critical for outcomes analysis. The need to develop the specifications of the resources and the procedures required to map lan-

guages to identify concepts so that uniformity can be attained was also described in a recent position paper of the Canon Group.³³

Until only recently, the nursing profession did not have professionally recommended classification schemes with which to implement the computer-based nursing information systems for the nursing process. Nomenclatures, taxonomies, and classification schemes were being developed through research, but no consensus had been reached about their utility. The recommendations of the Committee represent a first step toward building that consensus.

The recommendations of the Committee do not constitute a scientific evaluation and comparison of various nursing classification schemes. Classifications were considered if recommended to the Committee, and it is possible that other schemes that have not yet been evaluated could meet the criteria. In addition, the criteria developed by the Committee evaluate the degrees to which the classifications were developed on scientifically sound principles. The classification schemes had previously been tested for validity and reliability in aspects of nursing practice and the Committee did not independently repeat these assessments. The judgment of the Committee did not involve a quantitative evaluation.

As the nursing profession gains more experience with the standard classification schemes, the utility of a more uniform language that defines the logic of mapping concepts in natural language may become more evident and necessary. Because a UNLS within the UMLS provides a medium by which to link several languages, a network of data elements, and access to multiple databases, the ANA Steering Committee was able to recommend a set of existing classification schemes, each of which provides a partial solution. The work of developing a national nursing database continues. It will be several years before clinical nursing data that are national in scope will be readily available for use by researchers and policy makers. Until that time, the evaluation of the quality of nursing on a national level will be limited.

Nursing care is based upon standards of practice and assessment of human responses to actual and potential health problems. Such assessments lead nurses to identify and document what they do in a standardized and systematic manner. Use of a uniform language for documentation would enable inclusion of nursing-related data in the patient record and the international databases and retrieval of data from these two sources.³⁴ Through this process, nursing could ultimately demonstrate the effects of care on patient outcomes.

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